



**US Army Corps
of Engineers®**

North Atlantic Division Water Control Management Annual Report for Fiscal Year 1999

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North Atlantic Division
Water Control Management Annual Report
Fiscal Year 1999

1 Introduction

1.1 Background and Organization

Water Control Management is the responsibility of the Hydrology and Hydraulics (H&H) Team, Engineering Division, Directorate of Engineering and Technical Services. Division and District water control staffing is summarized in Table 1-1. In general, one FTE is dedicated to water control at the Division Office.

1.2 Purpose of Report

This report was prepared in conformance with the requirements of ER 1110-2-240, dated 8 October 1982. This report is the eighteenth such Annual Division Water Control Management Report for the North Atlantic Division. This report summarizes the significant water control activities for the Division during the past fiscal year and outlines anticipated future activities.

1.3 Scope

This report provides a general Division-wide summary of North Atlantic Division Water Control Management Activities and Accomplishments for Fiscal Year 1999 and current and future water management programs. Additional detail on all topics is provided in Appendices A- E for the Baltimore, Norfolk, New York, Philadelphia, and New England Districts respectively.

1.4 Division and District Responsibilities

The Districts are responsible for the operation, maintenance and regulation of all Corps projects within their respective Civil Works Boundaries in accordance with governing Engineering Regulations and related guidance. As major river basins in the North Atlantic Division are totally within assigned District Civil Works boundaries, no inter-district coordination is required for the regulation of projects. Districts prepare and implement water control plans and manuals, and regulate Corps projects to meet all project purposes. The Division Office is responsible for the review and approval of water control plans and manuals and associated activities. Detailed responsibilities are provided in the North Atlantic Division Water Control Center Guidance Memorandum dated 28 September 1994.

2 Hydrometeorologic Summary

2.1 Baltimore District

2.1.1 Flood Control

District flood control projects provided benefits during two minor flood events in FY 99.

23-25 January 1999. Relatively warm temperatures and ¾ to 1½ inch of heavy rain, associated with a frontal passage, combined to produce an estimated 1 to 2 inches of snowmelt and rainfall runoff over much of the northern half of the District. Minor flooding occurred along a number of unregulated streams and rivers and at several locations along the Susquehanna River in NY. Flood control operations at District reservoirs effectively prevented flooding on the Chemung and West Branch Susquehanna Rivers, and reduced flood levels along the Susquehanna River in NY to minor nuisance levels. Gates were closed at Almond, East Sidney, Whitney Point, Tioga-Hammond, Cowanesque, Stillwater, and Sayers which generally reduced peak river levels by 1 to 3 feet.

4-6 March 1999. Storms associated with a frontal system produced about 1.5 to 2 inches of heavy rain over the north central part of the District. Minor flooding occurred along many, unregulated streams and rivers. Flood control operations at Tioga-Hammond, Cowanesque, and Sayers prevented minor flooding downstream on the Tioga River and Bald Eagle Creek.

A table top flood exercise involving various key District elements was conducted in May 1999.

2.1.2 Low Flow Regulation

For the third year in a row, drought conditions impacted much of the District, becoming more severe in each successive year. The dry conditions during the last quarter of FY 98 persisted throughout the first quarter of FY 99. During the first three months of FY 99, rainfall over the District averaged less than 50 percent of normal. The least amount of rain fell in the Juniata River and North Branch Potomac River basins, where rainfall averaged only about 25 percent of normal. As 12-month rainfall deficits increased to almost 10 inches at some locations, streamflow and groundwater levels fell quickly, reaching record low levels for November and December at a number of sites.

Despite well below normal inflows, District reservoirs were maintained near normal elevations during the first quarter of FY 99. The exception was at Raystown Lake, which fell almost 7 feet in ten weeks, after minimum release requirements increased from 200 to 480 cfs in mid-November. The normal winter drawdown at Whitney Point Lake, East Sidney Lake, and F.J.Sayers Dam also provided significant increases in downstream flows from mid-November through the end of December. To provide some additional environmental benefits,

drawdown periods at Whitney Point and East Sidney were lengthened by two to three weeks. A planned 5-ft drawdown of Raystown Lake, which began in mid-October 1998 to facilitate construction activities at the lake, also provided significant increases in streamflows on the Juniata River for about three weeks.

Drought Contingency plans, which had been implemented at all applicable District reservoirs during FY 98, remained in effect at the start of FY 99. These plans permit additional water to be stored in the reservoirs to prolong the project's ability to release desired minimum flows; and also provide for the use of conservation storage to meet some emergency water supply needs.

Precipitation and runoff during the second quarter of FY 99 was above normal throughout the District, which allowed for significant recovery of streamflow and groundwater levels. In mid-March, all PA counties were downgraded to Drought Watch status, and the Drought Watch status was lifted for NY counties. Due to continued long-term rainfall deficits, counties in MD were left under a Drought Warning status.

Unusually dry conditions returned in May 1999 and continued well into August. Rainfall in May averaged only about 35 percent of normal, and was followed by monthly rainfall amounts in June and July that averaged about 50 percent of normal. By June streamflow levels at many locations in the District had again fallen to record levels for the time of year and were generally typical of low-flow conditions that exist in September and October. Groundwater levels had also fallen quickly and were also approaching record seasonal levels.

Heavy rains fell over much of District during the last half of August 1999, raising monthly rainfall totals to near normal for August. During the second week of September 1999, the rainfall associated with the remnants of Hurricane Dennis and Hurricane Floyd brought much more relief to the drought-stricken areas of the District. Monthly rainfall averages for September were generally several times normal, which brought the last 12-month rainfall average to almost normal in the western half of the District and slightly above normal in the eastern half.

Although minimum desired or required releases were being made from most District reservoirs as early as June, primary project purposes were not significantly impacted by the drought. At the onset of dry conditions in May 1999, pool levels in most District reservoirs were raised ½ to 1 foot in accordance with applicable drought contingency plans. This allowed the projects to sustain minimum desired or required releases, also allowing pool levels to be maintained at near normal levels at the end of FY 99.

2.1.3 Water Supply

Severe drought conditions during the last quarter of FY 99 prompted both the Interstate Commission on the Potomac River Basin (ICPRB) and the Susquehanna River Basin Commission (SRBC) to request releases from the contracted water supply storage in Jennings Randolph Lake and Curwensville Lake, respectively.

This was the first time, since completion of Jennings Randolph Lake in 1982, that the water supply storage was utilized to meet the low-flow requirements. The water supply releases resulted in an additional fall in the lake level of about 10 feet during the summer. The accelerated drawdown caused some minor impacts to in-lake recreation. Although hydrologic conditions in the lower portion of the Potomac basin improved significantly in late-August and September 1999, especially after the heavy rainfall associated with the remnants of Hurricanes Dennis and Floyd, severe drought conditions continued throughout much of the upper portion of the Potomac basin. As a result, only about 2 percent of the vacated, water supply storage could be replenished by the end of FY 99.

Water Control and Quality Section (WCQS) staff participated in a Drought Preparedness Exercise that is conducted annually by ICPRB to review procedures related to the use of the contracted water supply storage in Jennings Randolph Lake.

SRBC requested small (15 cfs) releases from Curwensville Lake. The releases were needed to meet consumptive-use requirements of the Chester Water authority. The request for the releases was triggered when the flow of the Susquehanna River at Marietta, PA dropped below 5,000 cfs. Minor rises in reservoir inflows were sufficient to quickly refill the evacuated water supply storage following each release period. There were no significant impacts to other project purposes. This is the first year that water supply releases have been requested by SRBC from Curwensville Lake.

None of the contracted water supply storage in Cowanesque Lake, owned by SRBC, was utilized during FY 99. Despite severe drought conditions, natural streamflow levels at Wilkes-Barre and Harrisburg, PA remained above the established water supply release trigger flows during FY 99.

2.1.4 Recreation

Baltimore District recreation areas logged 15.3 million visitor hours during FY 99, a 3.3 percent increase over FY 98. At Jennings Randolph Lake, scheduled whitewater releases were made on 17 and 18 April and 1,2,15,16,29, and 30 May 1999. Whitewater interests also benefited from water quality releases from this project on 3-4 October 1998 and 18-19 September 1999.

2.2 Norfolk District

2.2.1 Flood Control

During Water Year (WY) 1999, there was no major flooding in the James River Basin as the basin experienced a near record drought through most of the year. During the last days of WY 1999, significant rainfall was recorded in the Lower James River Basin causing the river to rise to just above flood stage at Scottsville, VA project at Scottsville.

Hurricanes Dennis and Floyd affected coastal portions of Virginia. Hurricane Floyd in mid September 1999, resulted in rainfall totals, ranging from 11 inches at Langley Air Force Base to over 15 inches at Fort Eustis in slightly more than 24 hours.

2.2.2 Low Flow Regulation

Regulation of Gathright Dam is directed toward maintaining Lake Moomaw at the maximum conservation pool (elevation 1582.0-ft., N.G.V.D.). Low flow augmentation releases are provided during periods of low flows for the improvement of downstream water quality. Monthly downstream flow requirements vary on a seasonal basis from a minimum of 158 c.f.s. in December and January to a maximum of 283 c.f.s. in July. When inflows to the reservoir are less than required to provide the low flow augmentation releases, conservation storage is utilized from Lake Moomaw to provide the required release and the reservoir pool elevation declines. On average, the project experiences conditions that draw down the reservoir pool from June through January.

At the start of WY 1999, the reservoir at the Gathright Dam and Lake Moomaw project was 14.6 feet below the maximum conservation pool. The reservoir continued to drop to elevation 1557.0 ft., N.G.V.D. in mid January 1999 before returning to maximum conservation pool in mid March 1999. The reservoir remained near the maximum conservation pool through mid May 1999. Subsequently a steady, and steeper than previously experienced, decline in the pool occurred due to the continuing drought conditions. The pool elevation on 30 September 1998 was 1557.2 ft., N.G.V.D. and continuing to fall. At this level, approximately 9.7% of the low flow augmentation storage remained available. This level was over 10 feet lower than the lake level at the same time the previous year and almost 6 feet lower than the project had ever recorded on 30 September.

2.3 New York District

2.3.1 Flood Control

While New York District does not operate any reservoirs, local protection projects prevented significant damages in 1999 during flooding resulting from Tropical Storm Floyd. Tropical Storm Floyd dropped between five and sixteen inches of rain over New York District river basins between 15 and 16 September 1999. Record flood peaks occurred in the Passaic, Raritan, Rahway and Elizabeth River Basins in New Jersey and the Saw Mill River Basin in New York.

The Raritan River at Bound Brook, New Jersey crested at elevation 42.13 ft-NGVD, 16.13 feet above flood stage and 4.66 feet above the previous flood of record. The USGS estimates that the flooding of the Raritan River at Bound Brook was the greatest since at least 1760 and probably since the time Bound Brook was first settled by Europeans a century earlier. Floyd rainfall totals for the Raritan and Elizabeth River Basins were 10 inches and 9.2 inches respectively, based on rain gage data at Milburn, NJ and Newark International Airport, NJ.

Rainfall began at about 5am on 15 September and ended about 10pm on 16 September, with 91% falling between 5am and 10pm on 16 September generally in two burst centered around 11am and 6pm on 16 September. The greatest hourly amounts were between 1 and 2 inches.

The South Orange, Rahway and Elizabeth Local Protection Projects accounted for all damages prevented during Tropical Storm Floyd. At South Orange exceedence is estimated at 0.5% (200 years) with stage reduction of 8 feet, 62 acres were protected from inundation. At Rahway exceedence is estimated at 0.7% (143 years), 71 acres were protected from inundation. The Rahway Local Protection Project is a levee project, no stage reduction resulted from construction of the project. At Elizabeth exceedence is estimated as 2.9% (34.5 years), stages were reduced 5 feet, 338 acres were protected from inundation. Damages prevented by Corps projects in New Jersey during Floyd are \$3,675,200 at Rahway, \$8,727,500 at South Orange and \$33,845,000 at Elizabeth.). Four lives were lost in New Jersey as a result of flooding from Tropical Storm Floyd

2.4 Philadelphia District

2.4.1 Flood Control

There were two significant floods in Philadelphia District during Fiscal Year 1999. On 24 January 1999, after three days of light rain, the Schuylkill and Lehigh River basins received over an inch of rain requiring flood control operations of Beltzville and F.E. Walter Dams. Hurricane Floyd dropped between 4 and 12 inches of rain throughout the Delaware River basin between 15 and 17 September 1999. The heaviest rainfall was over areas downstream of the District's flood control projects resulting in widespread flooding.

2.5 New England District

2.5.1 Flood Control

During the fiscal year, the New England region experienced very diverse weather patterns. Rainfall for the year was near normal due primarily to the impact of tropical storm Floyd. Prior to the arrival of tropical storm Floyd, in mid September, the New England region was experiencing significant drought conditions characterized by precipitation deficits (Oct through Aug) ranging from 4 to 13 inches throughout southern New England and 3 to 5 inches throughout northern New England. Snowfall during the winter months started out below normal and remained that way throughout the entire season in southern New England. Northern New England also remained below average until early March 1999 when significant snowfall occurred. By early March most southern watersheds were depleted of snow, whereas, northern watersheds were depleted in early April. Significant flood runoff occurred three times during FY99; once in January during a winter thaw period; once during the spring snowmelt season; and once again in September due to the arrival of tropical storm Floyd. Several coastal storms also impacted the New England coastline during FY99 producing high winds and higher than normal tide levels.

On 24 January a total of 0.9 to 1.7 inches of rainfall occurred over southern New England watersheds. Corresponding runoff, augmented by some snowmelt, caused some tributary

ivers to rise, however, only the Ware River downstream of Barre Falls Dam, experienced river levels at or near flood stage.

Rainfall associated with a storm system on 22 March, produced from 1 to over 3 inches over New England watersheds. While some snowmelt augmented runoff, only river stages on the Westfield River in Massachusetts and the Naugatuck River in Connecticut reached flood stage. Stages on the mainstem Merrimack and Connecticut Rivers, although rose significantly, did not approach flood stages. Flood control storage utilized at Corps reservoirs within the Westfield watershed ranged from 23 to 28 percent, whereas, Corps reservoirs within the Naugatuck watershed utilized only about 10 percent.

On 16 September 1999, tropical storm Floyd hit the New England region producing 4 to 8 inches of rainfall and strong coastal winds. Most NAE flood control dams were set to minimum gate settings in the afternoon of the 16th in anticipation of significant rainfall and runoff. In addition, reservoir regulation personnel, with support from personnel from the Hydrology & Hydraulics/Coastal and Water quality Team, staffed the reservoir control center 24 hours during the tropical storm's influence. Rainfall totals ranged from 4 to 6 inches in northern watersheds and 5 to 8 inches in southern areas, with some areas in Connecticut reporting over 9 inches. Runoff produced significant river rises and flood stage was exceeded along the Naugatuck River, as well as along some tributaries of the Connecticut and Merrimack Rivers. Upper reaches of the mainstem Merrimack River approached flood stage. Projects within the Blackstone and Thames River Basins did not experience significant runoff. Flood control storage utilized at NAE reservoirs ranged from 2 to 21 percent, with a maximum storage of 21 percent utilized at Hop Brook Lake within the Naugatuck watershed.

Regulation of Hurricane Barriers - During fiscal year 1999 the Stamford Hurricane barrier was operated on nine occasions with total damages prevented of \$100,000. The New Bedford Hurricane barrier was operated on seventeen occasions with total damages prevented of \$462,000.

3 Activities and Accomplishments

3.1 General Summary

The most significant accomplishments in FY 1999 was in the area of flood control, North Atlantic Division reservoir projects prevented approximately \$39 million in flood damages, as shown on Table 3-1. New England District projects in Connecticut prevented the majority of damages, accounting for approximately \$25.5 million in damages prevented. A summary of damages prevented by water control project is shown in Table 3-2.

Drought conditions in the northeastern part of the country resulted in implementation of drought contingency plans at Baltimore District projects and releases for low flow augmentation at Norfolk and Philadelphia District Projects.

Both the Interstate Commission for the Potomac River Basin (ICPRB) and Susquehanna River Commission (SRBC) requested releases from contracted water supply storage at Jennings Randolph Lake and Curwensville Lake respectively. This was the first time since

completion of the Jennings Randolph Lake project in 1982 that water supply storage was used to augment downstream flows. The SRBC requested small releases from Curwensville Lake for consumptive use requirements.

Gathright Dam and Lake Moomaw in Norfolk District provides augments low flows downstream of the project. Inflows were insufficient to meet downstream requirements resulting in use of conservation storage. At the end of the fiscal year the pool at Gathright Dam was 6 feet lower than ever recorded as of 30 September. Approximately 9.7 % of the low flow augmentation storage remained available.

The Delaware River Basin Commission (DRBC) requested releases from contracted water supply storage at Blue Marsh Lake and Beltzville Lake in the Philadelphia District to augment flows on the Delaware Rivers.

3.2 Water Control Data System

3.2.1 North Atlantic Division Headquarters

The division headquarters upgraded their water control data system (WCDS) by replacing a CDC 4300 workstation with a Sun Ultra 5 workstation running Solaris 2.7.

3.2.2 Baltimore District

Baltimore District was selected as one of four deployment sites for the testing and initial deployment of the modernized water control data software suite. Water Control and Quality Section (WCQS) staff developed models for the North Branch Potomac River for use with the modernized software. District personnel participated in weekly conference calls and continued to participate on the Corps Users Review Group (CURG) and on the System Design Team (SDT) for the flood impact assessment model. GIS software was used for hydrologic and hydraulic modeling in association with the modernized WCDS software.

The district upgraded their two Sun Sparc Ultra 1 workstations by adding memory and additional storage. The WCQS started replacing their X-terminals with high performance PC's running X-Windows emulation, this will eliminate the need for water control managers to have both an X-terminal and PC. Web based data dissemination was improved.

All districts continue to improve web dissemination of water control data. All water control offices in the North Atlantic Division are Y2K compliant.

3.3 Status of Water Control Plans and Manuals

The status of Water Control Manuals for all NAD Corps reservoirs, and reservoirs subject to Corps of Engineers prescribed regulations per ER 1110-2-241 is summarized in Table 3-5.

Drought Contingency Plans, also referred to as Drought Management Plans, have been

completed for all NAD Corps reservoir projects. Dam Failure Inundation Mapping and Flood Emergency Plans have also been completed for all NAD Corps reservoir projects in prior years.

"Acquisition of Lands Downstream from Spillways for Hydrologic Safety Purposes" Studies per ER 1110-2-1451 have been completed for all but one Corps reservoirs in NAD, that for the Tioga-Hammond project in NAB.

3.4 Deviations from Water Control Plans

3.4.1 Philadelphia District

The District impounded water at F.E. Walter Dam at the request of the Delaware River Basin Commission in anticipation of a basin wide drought in the Delaware River Basin. See Table 3-4.

3.4.2 New England District

Hodges Village Dam and North Hill Dam were operated with reservoir level restrictions due to continuing seepage problems at the projects. See Table 3-4.

3.5 Constraints on Water Control Plans

3.5.1 General

Constraints on individual project Water Control Plans are encountered at some NAD projects. These constraints are usually relatively minor, and usually entail limitations to the magnitude of reservoir releases, gate openings, or time to close gates. There are several instances where the planned bankfull capacity reservoir release causes some nuisance or minor flooding to downstream encroachments. This type of problem is presently resolved by limiting reservoir releases to below bankfull capacity where necessary, during regulation of most flood events. During future major flood events, the full bankfull release will be made when necessary with the acceptance of some minor damages caused by the necessary flood water releases. Perceived constraints are being studied and eliminated where possible.

3.5.2 Baltimore District

3.5.2.1 Cowanesque Lake

The selective withdrawal outlet works remain inoperable due to continued problems with the gate stems. The project can not meet water temperature objectives for the downstream warm water fishery.

3.5.2.2 Jennings Randolph Lake

Operation of the selective withdrawal system is restricted to eliminate intake tower vibrations at certain combinations of intake port and quality control gate settings.

3.5.2.3 Tioga-Hammond Lakes

The Crooked Creek outlet from Hammond Lake is closed when the pool is forecast to reach elevation 1089. All subsequent releases are made through the Hammond outlet works in the connecting channel.

3.5.2.4 Foster Joseph Sayers Dam

Regulation constraints are in place due to increased utilization of the downstream flood plain.

3.5.2.5 Aylesworth Creek Lake

From September to early November 1998, the lake could not be lowered below normal conservation pool due to a damaged gate valve stem, which was replaced.

3.5.3 Norfolk District

3.5.3.1 Gathright Dam and Lake Moomaw

Operational experience indicated that the capacity of the water quality outlet works is less than initially rated.

3.5.4 Philadelphia District

3.5.4.1 Blue Marsh Lake

There are some release restraints due to down stream nuisance flooding.

3.5.4.2 F.E. Walter Dam

The bypass system is inoperable due to the threat of cavitation and partial collapse of an access ladder. The inability to use this system results only in minor problems related to temperature.

3.5.5 New England District

3.5.5.1 Hodges Village Dam

Maximum pool level is restricted to 50 percent of capacity due to chronic seepage problems. Remedial construction is scheduled for completion in FY 2000.

3.5.5.2 West Hill Dam

Due to seepage during the March 1998 flood, the maximum pool is restricted to 15 feet during minor to moderate floods. Geotechnical surveillance is undertaken when the pool approaches or exceeds 12 feet. Remedial construction is expected during FY 2001.

3.6 New Water Control Projects

There are no new water control projects in the North Atlantic Division.

3.7 Cooperative Hydrologic Programs

Only minor changes were made in the FY 1999 Cooperative Stream Gauging Program with the U.S. Geological Survey and National Weather Service. In the Baltimore District one rain gauge was relocated and water temperature data collection discontinued at two stream gages where the data is no longer needed for project operation. See Table 3-5.

4 Current and Future Programs

4.1 General Summary

All current programs will be continued including procuring new or replacement WCDS equipment and software as outlined in the North Atlantic Division Water Control Data Systems Master Plan or on an as needed basis. Reservoir sedimentation studies and revision and updating of water control manuals will continue. On-going interagency programs such as the Coordination of Water Data Collection Activities and the Cooperative Stream Gauging Program with the United States Geological Survey will be continued on an annual basis. Training of Water Control Management personnel is continual on an annual basis as courses are made available, and new personnel are hired to fill vacancies. The annual North Atlantic Division Water Control Managers Meeting was held in May 1999, and the annual meeting will be continued in the spring of each year.

4.2 Water Control Data System

Baltimore District will continue as a deployment site for the modernized WCDS software suite. Geographic Information System (GIS) modeling will be used to better represent, interpret and analyze data. Some existing X-terminals will be eliminated being replaced with X-windows emulation software on existing or new personal computers.

Table 1-1

**North Atlantic Division
Water Control Staffing**

<u>OFFICE SYMBOL</u>	<u>POSITION</u>	<u>NAME</u>	<u>TELEPHONE</u>
<u>NORTH ATLANTIC DIVISION</u>			
CENAD-ET-ET	Hydraulic Engineer	Andrew Petallides	(718) 491-8750
CENAD-ET-ET	Hydraulic Engineer	Alfred K. Tai	(718) 491-8748
CENAD-ET-ET	Hydraulic Engineer	Ralph LaMoglia	(718) 491-8746
<u>BALTIMORE DISTRICT</u>			
CENAB-EN-GW	Supv. Hydraulic Engr.	Richard Olin	(410) 962-6769
CENAB-EN-GW	Hydraulic Engineer	Stan A. Brua	(410) 962-4894
CENAB-EN-GW	Hydraulic Engineer	Barry N. Flickinger	(410) 962-6777
CENAB-EN-GW	Hydraulic Engineer	James W. Haines	(410) 962-6768
CENAB-EN-GW	Hydraulic Engineer	Donald B. Lambrechts	(410) 962-6770
CENAB-EN-GW	Hydraulic Engineer	Julia A. Fritz	(410) 962-4895
CENAB-EN-GW	Computer Specialist	Thomas S. Ressin	(410) 962-6814
CENAB-EN-GW	Environmental Engineer	Kenneth Lee	(410) 962-6772 *
CENAB-EN-GW	Hydrologic Technician	Michael D. Barlock	(410) 962-5124
CENAB-EN-GW	Hydrologist	Kenneth Kulp	(410) 962-6775
CENAB-EN-GW	Physical Science Aid	Dawn M. Pisarski	(410) 962-5127
CENAB-EN-GW	Secretary	Maureen Jordan	(410) 962-4893
<u>NORFOLK DISTRICT</u>			
CENA0-EN-H	Supv. Hydraulic Engr.	Larry E. Holland	(757) 441-7774
CENA0-EN-H	Hydraulic Engineer	Mark Hudgins	(757) 441-7772
CENA0-EN-H	Hydraulic Engineer	Owen R. Reece, Jr.	(757) 441-7772
CENA0-EN-H	Hydraulic Engineer	Robin M. Williams	(757) 441-7772
CENA0-EN-H	Engineering Technician	Ellen Moore	(757) 441-7771
<u>PHILADELPHIA DISTRICT</u>			
CENAP-EN-H	Supv. Hydraulic Engr.	George A. Sauls	(215) 656-6678
CENAP-EN-H	Hydraulic Engineer	Francis P. Cook	(215) 656-6680
CENAP-EN-H	Hydraulic Engineer	Christine Tingle	(215) 656-6679
CENAP-EN-H	Hydrologic Engr. Tech.	Yvette Boggs	(215) 656-6685
<u>NEW ENGLAND DISTRICT</u>			
CENAE-EP-GW	Hydraulic Engineer	Paul Marinelli	(978) 318-8630
CENAE-EP-GW	Hydraulic Engineer	Greg Hanlon	(978) 318-8632
CENAE-EP-GW	Mechanical Engineer	Chris Scabia	(978) 318-8628
CENAE-EP-GW	Hydraulic Engineer	David Schafer	(978) 318-8163
CENAE-EP-GW	Hydraulic Engineer	Carmen Suarez	(978) 318 8629

* Kenneth Lee (NAB) is on a two year TDY assignment outside of water management.

Table 3-1

North Atlantic Division

Flood Damages Prevented

Fiscal Year 1999

FLOOD DAMAGES PREVENTED BY RESERVOIR PROJECTS

(In thousands of dollars)

STATE	NAB	NAE	NAN	NAO	NAP	TOTAL
CT		26,819	0			26,819
DC	0					0
DE	0				0	0
MA		1,211	0			1,211
MD	0					0
ME		0				0
NH		171				171
NJ			0		0	0
NY	2,583		0			2,583
PA	3,800				2,772	6,572
RI		0				0
VA	0					0
VT		0	1,654	0		1,654
WV	0					0
TOTAL	6,383	28,201	1,654	0	2,772	39,010

Note: Does not include \$215,000 in damages prevented by Stevenson Dam which is owned and operated by the Commonwealth of PA, but regulated for flood control by the Baltimore District.

Table 3-2

North Atlantic Division

Damages Prevented by Water Control Projects

Fiscal Year 1999

DISTRICT	PROJECT	FY 1999	CUMULATIVE
NAB	RAYSTOWN LAKE, PA	0	162,597
NAB	EAST SIDNEY LAKE, NY	749	142,256
NAB	JENNINGS RANDOLPH LAKE, MD & WV	0	354,642
NAB	INDIAN ROCK, PA	0	
NAB	STILLWATER LAKE, PA	1,634	77,755
NAB	SAVAGE RIVER DAM, MD	0	
NAB	FOSTER JOSEPH SAYERS LAKE, PA	52	109,542
NAB	ALVIN R. BUSH DAM, PA	73	162,756
NAB	CURWENSVILLE LAKE, PA	678	117,092
NAB	COWANESQUE LAKE, PA	545	150,553
NAB	TIOGA-HAMMOND LAKES, PA	1,478	269,430
NAB	ALMOND LAKE, NY	78	119,540
NAB	ARKPORT DAM, NY	4	43,818
NAB	WHITNEY POINT LAKE, NY	1,085	511,489
NAB	ALESWORTH CREEK LAKE, PA	7	4,990
NAE	BIRCH HILL DAM	13	58,711
NAE	LITTLEVILLE LAKE	399	53,725
NAE	KNIGHTVILLE DAM	782	142,680
NAE	CONANT BROOK DAM	0	2,296
NAE	BARRE FALLS DAM	6	23,315
NAE	TULLY LAKE	11	21,753
NAE	OTTER BROOK LAKE	0	27,555
NAE	SURRY MOUNTAIN LAKE	0	60,869
NAE	TOWNSHEND LAKE	0	62,559
NAE	BALL MOUNTAIN LAKE	0	97,023
NAE	NORTH SPRINGFIELD LAKE	0	84,437

Damages Prevented by Water Control Projects

Fiscal Year 1999

DISTRICT	PROJECT	FY 1999	CUMULATIVE
NAE	UNION VILLAGE DAM	0	30,338
NAE	SUCKER BROOK DAM *	0	145
NAE	NORTH HARTLAND LAKE	0	80,463
NAE	EAST BRIMFIELD LAKE	0	45,007
NAE	STAMFORD HURRICANE BARRIER	100	24,564
NAE	NEW BEDFORD HURRICANE BARRIER	362	16,444
NAE	WEST HILL DAM	0	30,064
NAE	MANSFIELD HOLLOW LAKE	0	43,209
NAE	COLEBROOK RIVER LAKE	90	37,066
NAE	WESTVILLE LAKE	0	22,959
NAE	HODGES VILLAGE DAM	0	52,083
NAE	BUFFUMVILLE LAKE	0	54,633
NAE	HOPKINTON-EVERETT LAKES	77	63,224
NAE	HALL MEADOW BROOK DAM *	0	9,596
NAE	WEST THOMPSON LAKE	0	18,409
NAE	EAST BRANCH DAM *	0	10,512
NAE	EDWARD MACDOWELL LAKE	0	7,846
NAE	THOMASTON DAM	15,064	227,298
NAE	NORTHFIELD BROOK LAKE	6,690	15,730
NAE	BLACK ROCK LAKE	3,709	61,351
NAE	HANCOCK BROOK LAKE	975	28,919
NAE	HOP BROOK LAKE	291	30,785
NAE	FRANKLIN FALLS DAM	81	69,053
NAE	BLACKWATER DAM	13	19,839
NAN	Waterbury Dam (Sect 7)	740	
NAN	Wrightsville (Sect 7)	454	
NAN	East Barre Dam (Sect 7)	459	
NAO	GATHRIGHT DAM & LAKE MOOMAW, VA	0	190,109
NAP	JADWIN RESERVOIR, PA	0	5,468
NAP	F.E. WALTER RESERVOIR, PA	350	101,140

Damages Prevented by Water Control Projects

Fiscal Year 1999

DISTRICT	PROJECT	FY 1999	CUMULATIVE
NAP	BELTZVILLE LAKE, PA	77	9,834
NAP	BLUE MARSH LAKE, PA	2,345	32,159
NAP	PROMPTON RESERVOIR, PA	0	8,345

Table 3-3

**North Atlantic Division
Water Control Manuals
FY 1999**

Project	Stream	Owner	District	Last Submission	Approval Date	Approved By	Revision Schedule
Almond Lake & Arkport Reservoir	Canacadea Cr./Canisteo R.	NAB	CE	Sep 1987	Dec 1987	NAD	FY 01
East Sidney Lake	Ouleout Cr.	NAB	CE	Aug 1996	Oct 1996	NAD	FY 06
Whitney Point Reservoir	Otselic R.	NAB	CE	Sep 1996	Dec 1996	NAD	FY 06
Alvin R. Bush Dam & Kettle Creek Lake	Kettle Cr.	NAB	CE	Nov 1997	Feb 1998	NAD	FY 08
Cowanesque Lake	Cowanesque R.	NAB	CE	Sep 1990	Nov 1990	NAD	FY 02
Curwensville Lake	West Branch Susquehanna R.	NAB	CE	Dec 1997	Feb 1998	NAD	FY 08
F.J. Sayers Dam & Reservoir	Bald Eagle Cr.	NAB	CE	Sep 1996	Oct 1996	NAD	FY 06
G.B. Stevenson Dam	First Fork Sinneahoning Cr	NAB	PA	Mar 1995	Apr 1995	NAD	FY 00
Raystown Lake	Raystown Branch Juniata R.	NAB	CE	Sep 1989	Dec 1989	NAD	FY 01
Stillwater & Aylesworth Creeks Reservoirs	Lackawanna R / Aylesworth Cr.	NAB	CE	Nov 1985	Dec 1985	NAD	FY 01
Tioga-Hammond Lake	Tioga R / Crooked Cr	NAB	CE	Sep 1988	Oct 1988	NAD	FY 01
York - Indian Rock	South Branch Codorus Cr.	NAB	CE	May 1987	May 1987	NAD	FY 00
Jennings Randolph Lake	North Branch Potomac R.	NAB	CE	Dec 1996	Jul 1997	NAD	FY 07
Savage River	Savage R.	NAB	MD	Sep 1997	Apr 1999	NAD	FY 09
Master Manual	Upper Susquehanna R.	NAB		Dec 1984	Jan 1985	NAD	FY 02
Master Manual	Lower Susquehanna R.	NAB		Dec 1984	Jan 1985	NAD	FY 02
Master Manual	North Branch Potomac R.	NAB		Sep 1986	Oct 1986	NAD	FY 01
Gathright Dam & Lake Moomaw	Jackson R.	NAO	CE	Jan 1985	Jan 1985	NAD	FY 01

Project	Stream	Owner	District	Last Submission	Approval Date	Approved By	Revision Schedule
Waterbury Dam & Reservoir	Little R.	NAN	VT	Oct 1970	Nov 1970	OCE	FY 01
General Edgar Jadwin Dam & Reservoir	Dyberry Ck.	NAP	CE	Oct 1997	Dec 1997	NAD	FY 07
Prompton Dam & Reservoir	West Branch Lackawaxen R.	NAP	CE	Sep 1997	Dec 1997	NAD	FY 07
Francis E. Walter Reservoir	Lehigh R.	NAP	CE	Oct 1994	Dec 1994	NAD	FY 05
Beltzville Dam & Reservoir	Pohopoco Cr,	NAP	CE	Jun 1996	Aug 1996	NAD	FY 06
Blue Marsh Dam & Reservoir	Tulpehocken Cr.	NAP	CE	Nov 1996	Jan 1997	NAD	FY 06
Master Manual	Conneticut River Basein	NAE		Jan 1984	Jan 1984	NED	FY 03
Union Village Dam	Ompompansoosuc R.	NAE	CE	Apr 1994	Apr 1994	NED	-
North Hartland Lake	Ottauquechee R.	NAE	CE	Dec 1985	Dec 1985	NED	FY 01
North Springfield Lake	Black R.	NAE	CE	Apr 99	Sep 99	NAD	FY 09
Ball Mountain Lake	West R.	NAE	CE	Sep 1973	Sep 1973	NED	FY 00
Townshend Lake	West R.	NAE	CE	Sep 1973	Sep 1973	NED	FY 00
Surrey Mountain Lake	Ashuelot R.	NAE	CE	Jan 1972	Jan 1972	NED	FY 00
Otter Brook Lake	Otter Bk.	NAE	CE	Jan 1972	Jan 1972	NED	FY 00
Birch Hill Dam	Miller R.	NAE	CE	May 1974	May 1974	NED	FY 00
Tully Lake	East Branch Tully R.	NAE	CE	May 1974	May 1974	NED	FY 00
Barre Falls Dam	Ware River	NAE	CE	Feb 1979	Feb 1979	NED	FY 00
Conant Brook Dam	Conant Bk.	NAE	CE	Feb 1979	Feb 1979	NED	FY 00
Knightville Dam	Westfield R.	NAE	CE	Jan 1978	Jan 1978	NED	FY 01
Littleville Lake	Westfield R.	NAE	CE	Jan 1978	Jan 1978	NED	FY 01

Project	Stream	Owner	District	Last Submission	Approval Date	Approved By	Revision Schedule
Colebrook River Lake	West Branch Farmington R.	NAE	CE	Mar 1990	Mar 1990	NED	FY 03
Mad River Dam	Mad River	NAE	CE	Mar 1990	Mar 1990	NED	FY 03
Sucker Brook Dam	Sucker Bk.	NAE	CE	Mar 1990	Mar 1990	NED	FY 03
Master Manual	Merrimack River Basin	NAE		Aug 1977	Aug 1977	NED	FY 00
Franklin Falls Dam	Pemigewaset R.	NAE	CE	Aug 1977	Aug 1977	NED	FY 00
Blackwater Dam	Blackwater R.	NAE	CE	Aug 1977	Aug 1977	NED	FY 00
Edward MacDowell Dam	Nubanusit Bk.	NAE	CE	Aug 1977	Aug 1977	NED	FY 00
Hopkinton-Everett Lakes	Contoookook R.	NAE	CE	Aug 1977	Aug 1977	NED	FY 00
Master Manual	Thames River Basin	NAE		Jul 1980	Jul 1980	NED	FY 03
Mansfield Hollow Lake	Nachaug R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
Buffumville Lake	Little R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
Hodges Village Dam	French R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
East Brimfield Lake	Quinebaug R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
Westville Lake	Quinebaug R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
West Thompson Lake	Quinebaug R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 03
Master Manual	Blackstone River Basin	NAE		Jul 1980	Jul 1980	NED	FY 02
West Hill Dam	West R.	NAE	CE	Jul 1980	Jul 1980	NED	FY 02
Master Manual	Housatonic River Basin	NAE		Oct 1976	Oct 1976	NED	FY 02
Hall Meadow Brook	Hall Meadow Brook	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
East Branch Dam	East Branch Naugatuck R.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02

Project	Stream	Owner	District	Last Submission	Approval Date	Approved By	Revision Schedule
Thomaston Dam	Naugatuck R.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
Black Rock Lake	Branch Bk.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
Northfield Brook Lake	Northfield Bk.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
Hancock Brook Lake	Hancock Bk.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
Hop Brook Lake	Hop Bk.	NAE	CE	Oct 1976	Oct 1976	NED	FY 02
New Bedford Hurricane Barrier	N/A	NAE	CE	Aug 1983	Aug 1983	NED	FY01
Stamford – Fairhaven Hurricane Barrier	N/A	NAE	CT	Sep 1998	Oct 1999	NAD	FY 08

Table 3-4

North Atlantic Division**Water Control Deviations
Fiscal Year 1999**

Date	Project	District	Description	Major/Minor	Time Period
Aug-99	F.E. Walter Reservoir	Philadelphia	Impound up to elevation 1392 at Delaware River Basin Commission request in anticipation of basin-wide drought	Minor	Aug 99 - Nov 99
FY 99	Hodges Village Dam	New England	Pool elevation restricted due to seepage problems.	Minor	Oct 98 - Sep 99
FY 99	West Hill Dam	New England	Pool elevation restricted due to seepage problems.	Minor	Oct 98 - Sep 99
Jun-99	Thomaston Dam	New England	Impound a pool of up to 34 feet to provide low flow augmentation during a waste water treatment plan upgrade in Waterbury, CT	Minor	Jun 99 - Sep99
Jul-99	Westville Lake	New England	Draw down pool 3 feet to aid State Police investigation.	Minor	Jul-99

NOTEWORTHY OPERATIONS:

1. Raystown Lake was lowered about 5 feet to elevation 781 feet from 04-25 November 1998 to facilitate construction/replacement of about 460 feet of the bulkhead at the lake's main marina. Due to drought the lake did not refill until mid-March 1999.
2. Kettle Creek Lake (Alvin R. Bush Dam) was lowered about 6 feet to elevation 835 feet from 19-26 October to facilitate completion of the final stage of a swimming beach and boat ramp improvement project. Drought conditions prevented the lake from refilling until mid-December 1998.
3. Curwensville Lake was lowered about 2 feet for two brief periods in April and May 1999 to facilitate inspection and repairs to the Clearfield County Park beach facility.
4. Scheduled low flow augmentation releases from Gathright Dam were reduced by 25% at the request of the Commonwealth of Virginia in an effort to prevent further reduction in the conservation pool at Lake Moomaw.

Table 3-5

North Atlantic Division

USGS and NWS Cooperative Program Summary
Fiscal Year 1999

Division & District Office	NWS Cooperative Gauging Program	NWS AFOS	NWS DOMSTAT	USGS Cooperative Gauging Program	Total
Divison HQ	0	0	0	0	0
Baltimore	0	1,920	500	893,590	896,010
Philadelphia	4,677	1,600	500	347,550	354,327
New York	0	0	0	22,520	22,520
Norfolk	3,647	1,920	500	203,753	209,820
New England	0	1,900	500	298,896	301,296
Total	8,324	7,340	2,000	1,766,309	1,783,973